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# How to Make Today's Weareable Health Devices more Trustable

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# I. INTRODUCTION [2-3 PAGES]

- 1.1 What is the problem?
- 1.2 How has it been solved till now?
- 1.3 What was your main solution idea?
- 1.4 What are the key technical details of your solution?
- 1.5 How did you evaluate your solution (2-3 key results)?
- 1.6 A high level figure of your solution, or evaluation method
- 1.7 A list of contributions (3-4) that you can claim from this work.

## II. BACKGROUND [2-3 PAGES]

- 2.1 Provide a background of the problem, in easy-to-understand terms. This should not be tied to your solution. Here you can provide some context about the problem why it is important, where it is used, etc.
- 2.2 Give a high level view of the different approaches used to solve the problem till now. Within each approach, there may be multiple papers that fall within the same approach.

#### III. DESIGN OVERVIEW [1-2 PAGES]

- 3.1 High-level conceptual figure of how your solution works
- 3.2 Workflow of how your solution works the detailed pieces will come in the next section you can give forward pointers to the details
- 3.3 What kinds of failures or attacks is your solution meant to handle
- 3.4 One or two common use cases how an end user will use your solution

### IV. SOLUTION DETAILS [LONGEST SINGLE SECTION]

Here you describe the detailed techniques in your solution. For each part of the solution, put it in the context of the overall system or solution where does it fit, what is its functionality. Do not just give pseudo code, but explain in words what is the design behind the technique. If there are alternate ways of doing this, describe them and say why one is better than the others. If your technique expands some prior technique, refer to that, and point out the addition that you have done.

#### V. IMPLEMENTATION [2-3 PAGES]

What language, IT infrastructure? What are the pragmatic trade-offs that you had to make? What is the complexity of the implementation LOC, other metrics? What are the dependencies of your implementation?

#### VI. EXPERIMENTS AND RESULTS [AS MUCH AS YOU NEED]

For each result, explain: what is the goal of the experiment, what you did, then comes the plot, then interpret the plot. Try and have some comparative result, with prior work.

#### VII. DISCUSSION

Here talk of things that your solution does not address straight away, but can be tweaked to handle. Point out weaknesses of your solution and how you would address them

#### VIII. CONCLUSION

Summarize the main contributions of the work and what further work someone should do to make the solution better.

#### REFERENCES

- [1] I. Baggili, J. Oduro, K. Anthony, F. Breitinger, and G. McGee, "Watch What You Wear: Preliminary Forensic Analysis of Smart Watches," in 2015 10th International Conference on Availability, Reliability and Security. IEEE, aug 2015, pp. 303–311. [Online]. Available: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=7299930
- [2] A. Blanda, "Fuzzing Android: a recipe for uncovering vulnerabilities inside system components in Android," in *Black Hat Europe*, 2015. [Online]. Available: https://www.blackhat.com/docs/eu-15/materials/eu-15-Blanda-Fuzzing-Android-A-Recipe-For-Uncovering-Vulnerabilities-Inside-System-Components-In-Android-wp.pdf
- [3] K. W. Ching and M. M. Singh, "Wearable Technology Devices Security and Privacy Vulnerability Analysis," *International Journal of Network Security & Its Applications (IJNSA)*, vol. 8, no. 3, 2016.
- [4] B. Cui, Y. Ni, and Y. Fu, "ADDFuzzer: A New Fuzzing Framework of Android Device Drivers," in 2015 10th International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA). IEEE, nov 2015, pp. 88–91. [Online]. Available: http://ieeexplore.ieee.org/document/7424806/

- [5] Q. Do, B. Martini, and K.-K. R. Choo, "Is the data on your wearable device secure? An Android Wear smartwatch case study," *Software: Practice and Experience*, 2016. [Online]. Available: http://doi.wiley.com/10.1002/spe.2414
- [6] Y. Gelogo and H.-K. Kim, "Integration of wearable monitoring device and android smartphone apps for u-healthcare monitoring system," vol. 9, no. 4, pp. 195–202, 2015.
- [7] A. Machiry, R. Tahiliani, and M. Naik, "Dynodroid: an input generation system for Android apps," in *Proceedings of the 2013 9th Joint Meeting on Foundations of Software Engineering ESEC/FSE 2013*. New York, New York, USA: ACM Press, 2013, p. 224. [Online]. Available: http://dl.acm.org/citation.cfm?doid=2491411.2491450
- [8] F. Sposaro and G. Tyson, "iFall: An android application for fall monitoring and response," in 2009 Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE, sep 2009, pp. 6119–6122. [Online]. Available: http://ieeexplore.ieee.org/document/5334912/
- [9] H. Ye, S. Cheng, L. Zhang, and F. Jiang, "DroidFuzzer," in *Proceedings of International Conference on Advances in Mobile Computing & Multimedia MoMM '13*. New York, New York, USA: ACM Press, 2013, pp. 68–74. [Online]. Available: http://dl.acm.org/citation.cfm?doid=2536853.2536881